

# Gram-negative



From Wikipedia, the free encyclopedia.

Bacteria that are **Gram-negative** are *not* stained dark blue or violet by Gram staining, in contrast to Gram-positive bacteria.

The difference lies in the cell wall of the two types; Gram-positive bacteria have a high amount of peptidoglycan in their cell wall which the stain interacts with, while Gram-negative bacteria have a cell wall made primarily of lipopolysaccharide. The Gram-negative cell wall is similar to a cytoplasmic membrane, typically only a few layers thick and generally much thinner than Gram-positive types.

Many species of Gram-negative bacteria are pathogenic. This pathogenic capability is usually associated with certain components of their cell walls, particularly the lipopolysaccharide (endotoxin) layer.

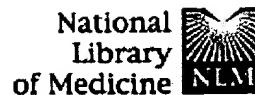
The proteobacteria are a major group of Gram-negative bacteria, including for instance *Escherichia coli*, *Salmonella*, and other Enterobacteriaceae, *Pseudomonas*, *Moraxella*, *Helicobacter*, *Stenotrophomonas*, *Bdellovibrio*, acetic acid bacteria, legionella and a great many others. Other notable groups of Gram-negative bacteria include the cyanobacteria, spirochaetes, green sulfur and green non-sulfur bacteria.

Retrieved from "<http://en.wikipedia.org/wiki/Gram-negative>"

Categories: Bacteria

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## The ineffectiveness of organic acids, freezing and pulsed electric fields to control *Escherichia coli* O157:H7 in beef burgers.

**Bolton DJ, Catarama T, Byrne C, Sheridan JJ, McDowell DA, Blair IS.**

The National Food Centre, Teagasc, Dunsinea, Castleknock, Dublin, Food Studies Research Unit, The University of Ulster, Newtownabbey, UK. [dbolton@nfc.teagasc.ie](mailto:dbolton@nfc.teagasc.ie)

**AIMS:** The objective of this study was to investigate the potential value of individual and combined applications of some GRAS (generally regarded as safe) additives with freezing and pulsed electric field (PEF) application, in reducing the risks associated with the presence of *E. coli* O157:H7 in beef burgers. **METHODS AND RESULTS:** Beef burgers, trimmings and filter paper were inoculated with *E. coli* O157:H7 and subjected to a range of chemical and physical treatments. Sequential application of 2% (v/v) lactic acid and freezing (at -20 degrees C for 2 h) resulted in a decrease of approximately 6 log<sub>10</sub> cfu cm<sup>-1</sup> in *E. coli* O157:H7, but only on filter paper. All other treatments were ineffective. **CONCLUSIONS:** Currently available methods for controlling *E. coli* O157:H7 in beef burgers during production are ineffective. **SIGNIFICANCE AND IMPACT OF THE STUDY:** Further research is needed to develop controls for *E. coli* O157:H7 during beef burger production.

Publication Types:

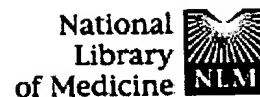
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## Thermal inactivation of Escherichia coli O157:H7 in ground beef supplemented with sodium lactate.

Huang L, Juneja VK.

U.S. Department of Agriculture, Agricultural Research Service, Eastern Regional Research Center, 600 East Mermaid Lane, Wyndmoor, Pennsylvania 19038-8598, USA.  
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A study was conducted to investigate the antimicrobial effect of sodium lactate (NaL) (0, 1.5, 3.0, and 4.5%) on the survival of Escherichia coli O157:H7 in 93% lean ground beef. Samples inoculated with a mixture of four strains of E. coli O157:H7 (10(7) to 10(8) CFU/g) were subjected to immersion heating in a water bath stabilized at 55, 57.5, 60, 62.5, or 65 degrees C. Results of statistical analysis indicated that the heating temperature was the only factor affecting the decimal reduction times (D-values) of E. coli O157:H7 in 93% lean ground beef. The change in temperature required to change the D-value (the z-value) was determined as 7.6 degrees C. The thermal resistance of this organism was neither affected by the addition of NaL nor by the interactions between NaL and temperature. Adding NaL to ground beef to reduce the thermal resistance of E. coli O157:H7 is therefore not recommended.

PMID: 12696693 [PubMed - indexed for MEDLINE]

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